

## ITU FREQUENCY/WAVELENGTH REFERENCE

## ABSTRACT

A wavelength reference (10) including at least one gas-tunable etalons (12). Each etalon (12) has first and second reflective surfaces (20,22), making a reflecting surface pair (23). Each reflecting surface pair (23) surrounds a cavity (16) which is filled with a gas-tunable medium (19) having a variable optical index of refraction. The etalons (12) produce equally-spaced spectral lines (4) which are variable in response to changes in the gas-tunable medium (19) such as varying gas pressure or composition. The spectral lines (4) are tuned to align to an external wavelength standard, preferably an ITU reference grid (2). The properties of the gas-tunable medium (19) are then fixed, preferably by sealing an enclosure (14) which surrounds the etalons (12), so that they act as a wavelength reference (10).

The etalon (12) can be a reflective etalon (29) or in an alternate embodiment (60), can be a transmissive etalon (29).

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